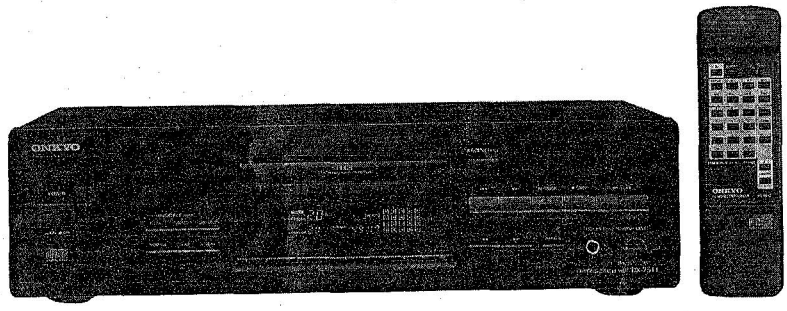
Ref. No.3567

ONKYO® SERVICE MANUAL

COMPACT DISC PLAYER

DX-7511



Black model/Silver model

MP,MPT	230V AC,50Hz
MW	120/220V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO®
AUDIO COMPONENTS

Specifications

Signal readout system:	Optical non-contact
Reading rotation:	About 500 - 200 r.p.m. (constant linear velocity)
Linear velocity:	1.2 - 1.4 m/s
Error correction system:	Cross Interleave Reed-Solomon code
D/A converter:	1 bit PWM ACCUPULSE D/A CONVERTER
Sampling frequency:	352.8 kHz (Eight-times oversampling)
Number of channels:	2 (stereo)
Frequency response:	5 Hz - 20 kHz
Total harmonic distortion:	0.004 % (at 1 kHz)
Dynamic range:	96 dB
Signal to noise ratio:	100 dB
Channel separation:	90 dB (at 1 kHz)
Wow and Flutter:	Below threshold of measurability
Output level:	2 volts r.m.s.
Headphone jack:	1 Optimum load impedance 8 to 200 ohms
Power consumption:	15 watts
Power supply rating:	European and Australian models: AC 230 V, 50 Hz Worldwide model: AC 120 V and AC 220-230V switchable, 50/60 Hz
Dimensions (W × H × D):	435 × 121 × 310 mm (17-1/8" × 4-3/4" × 12-3/16")
Weight:	4.7 kg (10.4 lbs.)

Specifications and external appearance are subject to change without notice because of product improvements.

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SERVICE PROCEDURES

1. Safety-check out

After correcting the original service problem,perform the following safety check before releasing the set to the customer:

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

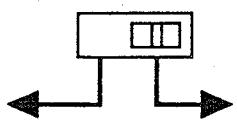
Specifications:More than 10Mohm at 500V.

2. Voltage Selector (Back panel)

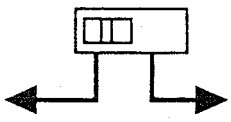
Worldwide models are equipped with a voltage selector to conform with local power supplies.Be sure to set this switch to match the voltage of the power supply in user's area before turning the power switch on.

Voltage is changed by sliding the groove in the switch with a screw driver to the right or left.

Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



at AC120V



at AC220V

CAUTION ON REPLACEMENT OF OPTICAL PICUP

The laser diode in the optical pickup block is so sensitive to static electricity,surge current and etc, that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair,carefulley take the following precautions. (The following precautions are included in the service parts.)

PRECAUTIONS

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with inpedance lower than 10MΩ) on the work-desk and place the set on the conductive sheet so that the chassis.

2.Grounding for the test equipment and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3.Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4.Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5.Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMMISION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

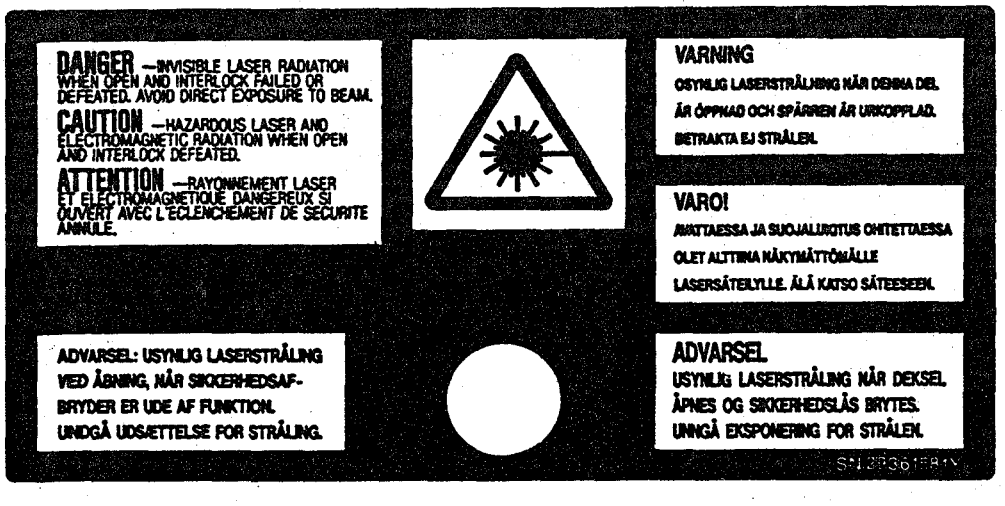
Laser Diode Properties

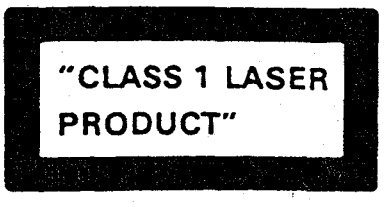
- Material: GaAlAs
- Wavelength: 760~800nm
- Emission Duration: continuous
- Laser output: max. 0.5mW*

  *This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

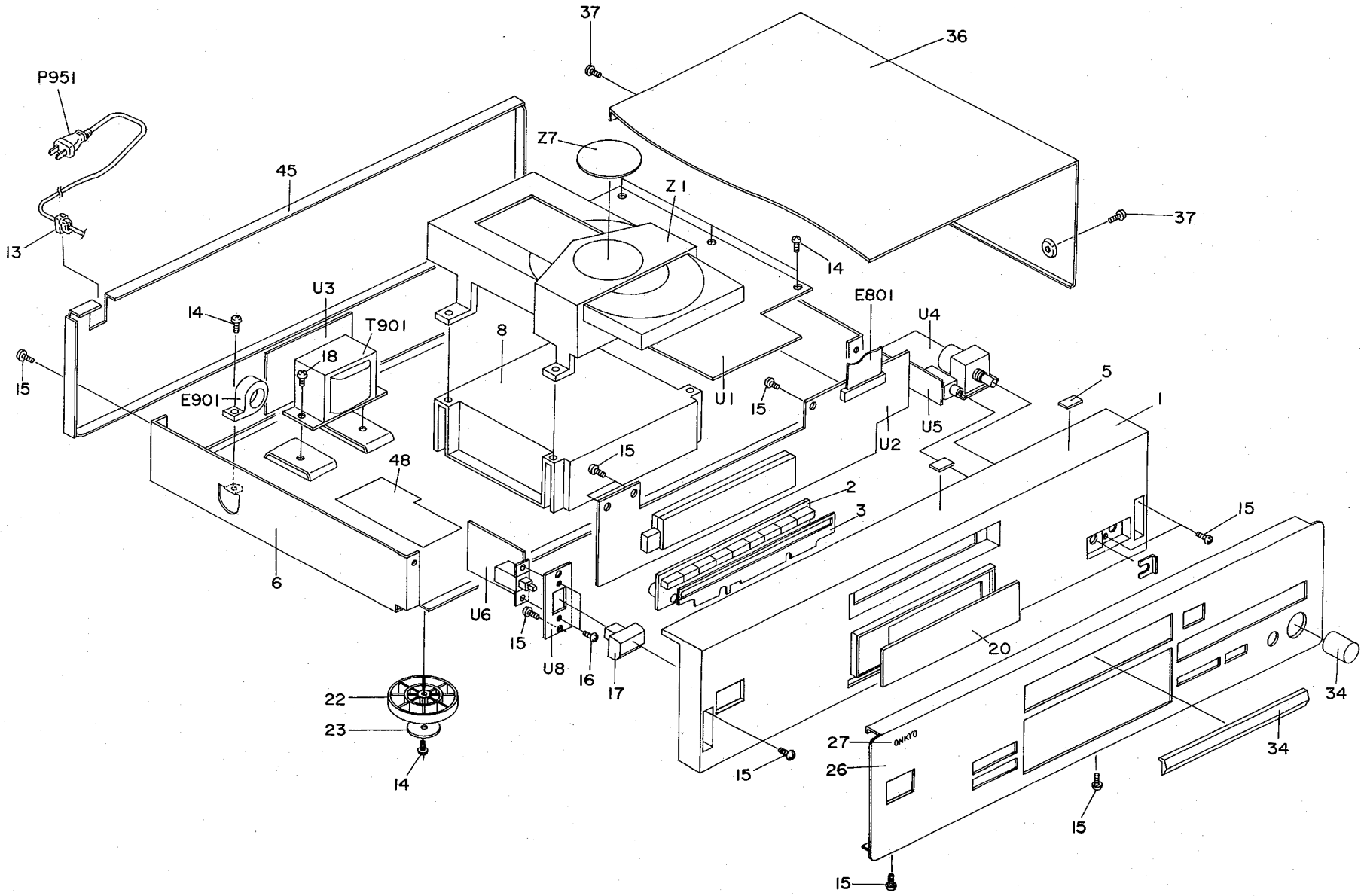
LASER WARNING LABELS

The label shown below are affixed.


DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLENCHEMENT DE SECURITE ANNULE.
VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAF-BRYDER ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
ADVARSEL
USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.



CHASSIS - EXPLODED VIEW



CHASSIS - EXPLODED VIEW PARTS LIST

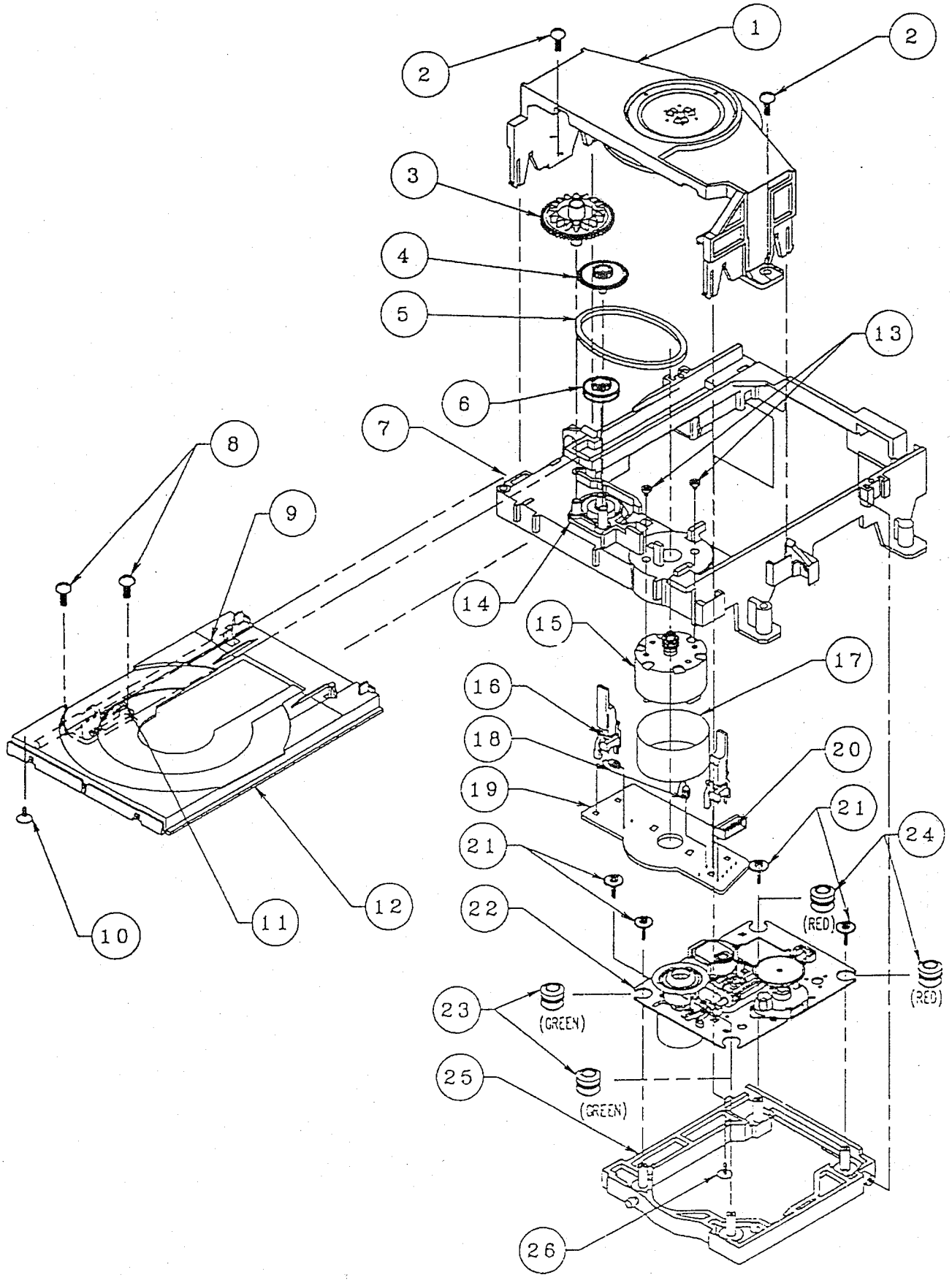
REF. NO	PART NO.	DESCRIPTION
A1	27110962AY	Front bracket <B>
	27110963AY	Front bracket <S>
A2	28325459Y	Knob (TEN) <B>
	28325460Y	Knob (TEN) <S>
A3	27225116Y	Shield plate
A5	28141288	0.8t×15×10, Cushion
A6	27100324Y	Chassis
A8	27190994AY	Holder (M)
A13	⚠ 27300750	Cord bushing
A14	831430088	3TTW+8B(BC), Screw
A15	838130088	3TTB+8B, Screw
A16	838430107	3TTP+10S(BC), Screw
A17	28325465Y	Knob (POW) <B>
	28325466Y	Knob (POW) <S>
A18	830440089	4TTC+8C(BC), Screw
A20	28191760AY	Clear plate <B>
	28191761AY	Clear plate <S>
A22	27175316B	Leg
A23	28141309	t1.6, Cushion
A26	27211868Y	Front panel <B>
	27211869Y	Front panel <S>
A27	28135244Y	Badge <B>
	28135245Y	Badge <S>
A32	28148357Y	Door ass'y <B>
	28148358Y	Door ass'y <S>
A34	28325454Y	Knob (TONE) <B>
	28325455Y	Knob (TONE) <S>
A36	28184664Y	Top cover <B>
	28184669Y	Top cover <S>
A37	838430088	3TTB+8B(BC), Screw <B>
	838230088	3TTB+8B(Ni), Screw <S>
A45	27122292Y	Rear panel <P>
	27122336Y	Rear panel <T>
	27122293Y	Rear panel <W>
A48	29361957Y	Label (ALL2)

REF. NO	PART NO.	DESCRIPTION
E801	2047271512	NCFC7-271512, FFC
E803	2046211012Y	NCFC6-211012, FFC
E901	230910	ESD-R-25DB, Core
P951	⚠ 253175Y	AS-CEE, AC Cord
T901	⚠ 2301245Y	NPT-1290P, Power Transformer <P,T>
	⚠ 2301246Y	NPT-1290DG, Power Transformer <W>
U1	1H340531-1AY	NAAR-5931-1A, Main circuit PC board <P,T>
	1H340531-1BY	NAAR-5931-1B, Main circuit PC board <W>
U2	1H340532-1AY	NADIS-5932-1A, Display circuit PC board <P,T>
	1H340532-1BY	NADIS-5932-1B, Display circuit PC board <W>
U3	1H340533-1AY	NAPS-5933-1A, Power transformer PC board <P,T>
	1H340533-1BY	NAPS-5933-1B, Power transformer PC board <W>
U4	1H340534-1AY	NAAF-5934-1A, Outout level control circuit PC bopard <P,T>
	1H340534-1BY	NAAF-5934-1B, Outout level control circuit PC bopard <W>
U5	1H340535-1AY	NAAF-5935-1A, Headphone jack PC bopard <P,T>
	1H340535-1BY	NAAF-5935-1B, Headphone jack PC bopard <W>
U6	1H340536-1AY	NASW-5936-1A, Power switch circuit PC bopard <P,T>
	1H340536-1BY	NASW-5936-1B, Power switch circuit PC bopard <W>
U7	1H340537-1BY	NASW-5937-1B, AC voltage selector circuit PC bopard <W>
U8	1H340538-1AY	NAETC-5938-1A <P,T>
	1H340538-1BY	NAETC-5938-1B <W>
Z1	24800015Y	NCD-150S, CD player mechanism ass'y
Z2	838130088	3TTB+8B, Screw
Z3	24840105Y	Boss (PCB)
Z4	838120080	2TTB+8B, Screw
Z5	1H340539-1Y	NAETC-5939-1, CD mechanism circuit PC bopard
Z6	2042161012Y	NCFC2-161012, FFC
Z7	24836020Y	Cushion

<B>: Black model only
<S>: Silver model only
<P>: European model only
<T>: Asian model only
<W>: Worldwide model only

NOTE: THE COMPONENTS INENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CD MECHANISM EXPLODED VIEW

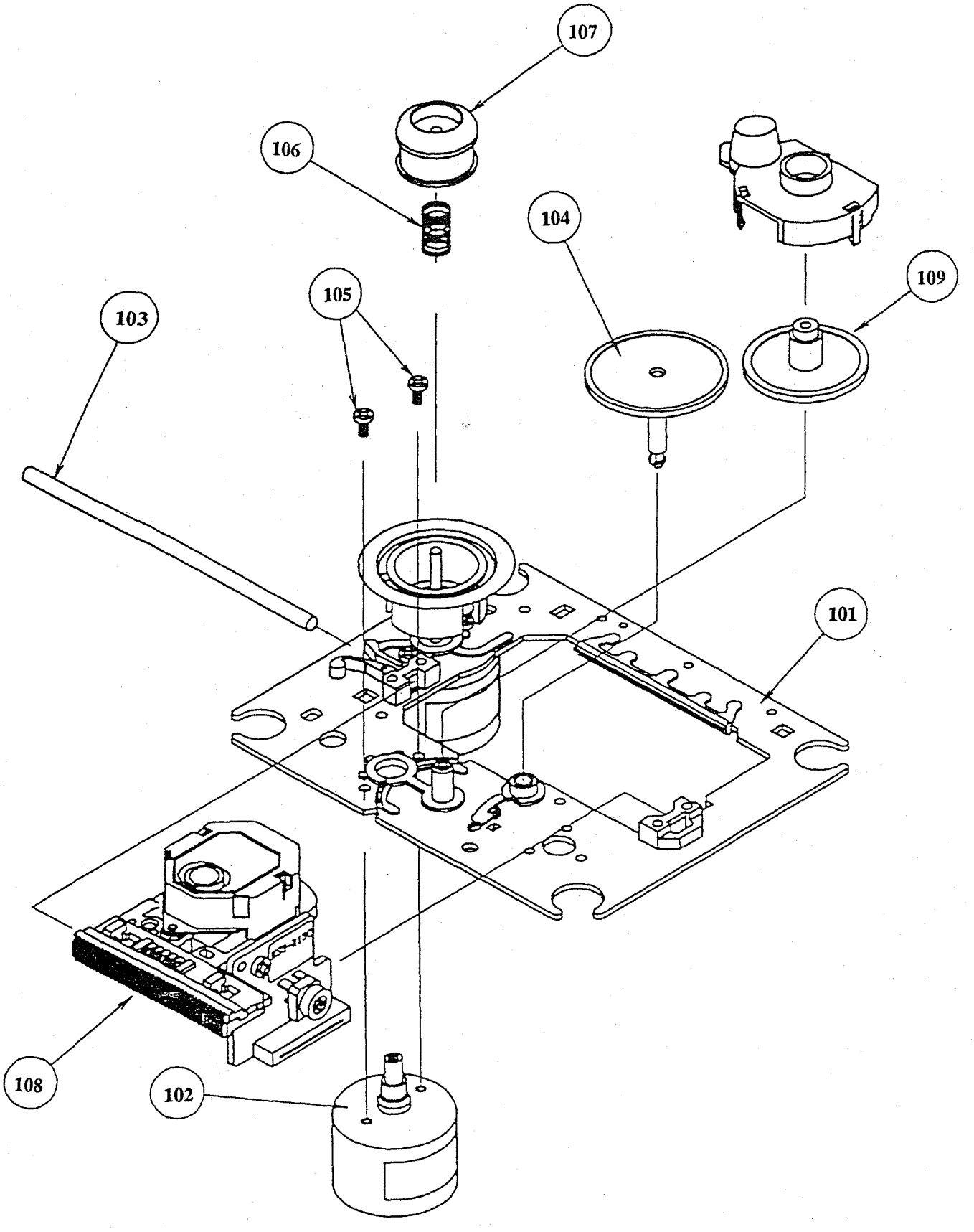


PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
1	X2626-229-1	Holder ass'y
2	7685-646-79	BV3×8,Screw
3	2627-163-01	Gear (P)
4	2627-162-01	Gear (C)
5	4927-649-01	Belt
6	2627-172-01	Pulley (S)
7	2627-169-01	Chassis
8	7685-647-79	B3C10,Screw
9	2627-171-01	Shaft
10	7685-233-19	K2.6×6,Screw
11	2627-164-01	Bearing
12	2627-170-01	Table disk
13	7621-775-10	B2.6×4,Screw
14	2627-166-01	Cam
15	X2625-878-1	Loading motor ass'y
16	1572-086-11	Leaf switch
17		Shield
18	1412-852-11	47 μ H, Inductor
19	1656-254-11	Loading PCB
20	1695-107-11	5P connector
21	3916-006-01	2.6×16, Special Screw
22		KSM-213CGN
23	3910-095-11	Rubber vibration
24	3931-379-01	Rubber vibration
25	X2625-879-1	Holder (BU) ass'y
26	4917-583-21	Bracket yoke

DX-7511

DRIVE UNIT EXPLODED VIEW

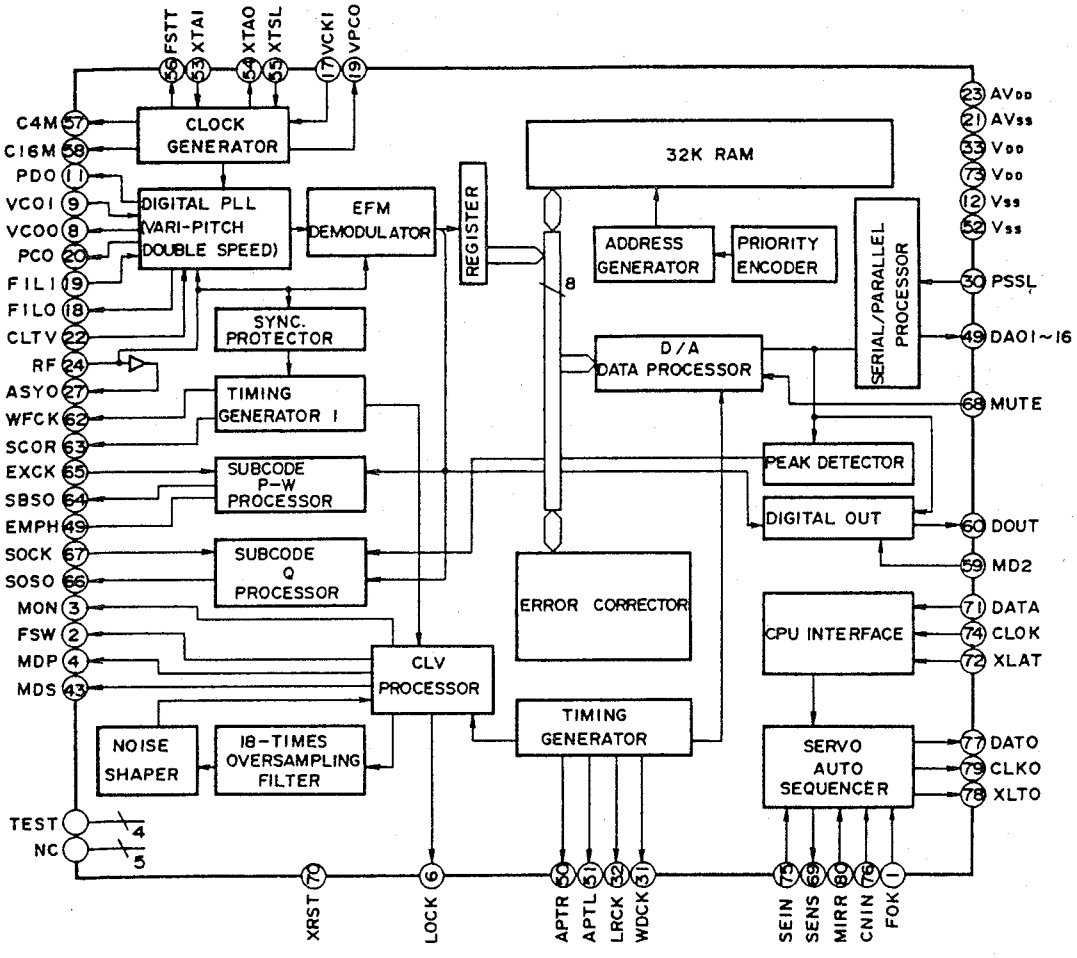


PARTS LIST

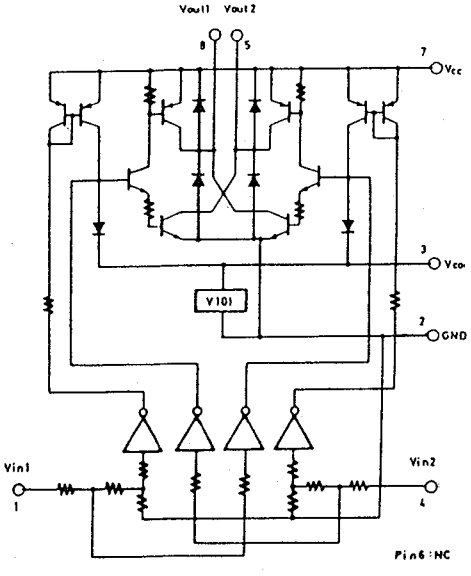
REF. NO.	PART NO.	DESCRIPTION
101	X2625-984-1	Chassis ass'y
102	X2625-769-1	Motor gear ass'y
103	2626-908-01	Sled shaft
104	2625-188-02	Gear (A)
105	7621-255-15	P2×3, Screw
106	2625-191-01	Spring (S)
107	2625-477-01	Ring (LO)
108	8848-483-05	KSS213C, Optical pickup
109	2627-003-01	Gear (B)

IC BLOCK DIAGRAMS AND DESCRIPTION

CXD2500BQ(Didital Signal Processor)



LB1639 (Volume Motor Drive)

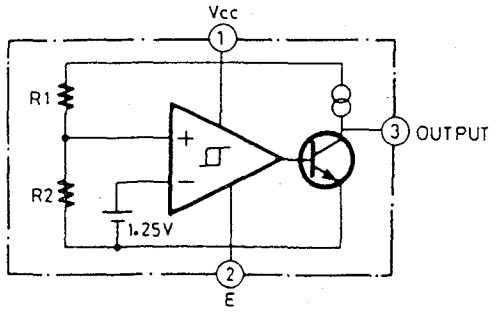


NO.	SYMBOL	I/O	DESCRIPTION	
1	FOK	I	Foucs Ok input	
2	FSW	O	Output filter changeover output for spindle motor	
3	MON	O	Spindle motor control output	
4	MDP	O	Spindle motor servo control	
5	MDS	O	Spindle motor servo control	
6	LOCK	O	H when GFS is the high level	
7	NC			
8	VCOO	O	Oscillation circuit output for analog EFM PLL.	
9	VCOI	I	Oscillation circuit input for analog EFM PLL. (8.6436MHz)	
10	TEST	I	Test terminal	
11	PDO	O	Charge pump output analog EFM PLL	
12	Vss		Ground terminal	
13-15	NC			
16	VPCO	O	PLL charge pump output for variable pitch	
17	VCKI	I	Clock input for variable pitch from VCO (16.934MHz)	
18	FILO	O	Filter output for master PLL.	
19	FILI	I	Filter input for master PLL.	
20	PCO	O	Charge pump output of master PLL	
21	AVss		Analog ground	
22	CLTV	I	VCO control voltage input for master	
23	AVDD		Analog section power supply (+5V)	
24	RF	I	EFM signal input	
25	BIAS	I	Asymmetry circuit constant current input	
26	ASYI	I	Asymmetry comparator voltage input	
27	ASYO	O	EFM full swing output	
28	ASYE	I	Asymmetry control circuit	
29	NC			
30	PSSL	O	Audio data output mode changeover input Serial data at L and paraller data at H.	
31	WDCK	I	D/A interface for 48 bits slot. Word clock f=2Fs.	
32	LRCK	I	D/A interface for 48 bits slot. LR clock f=Fs.	
33	VDD		Power supply terminal (+5V)	
34-49			Data output terminals	
			PSSL=1	PSSL=0
34	DA16	O	DA16	Serial data of 48 bits slot
35	DA15	O	DA15	Bit clock of 48 bits slot
36	DA14	O	DA14	Serial data of 64 bits slot
37	DA13	O	DA13	Bit clock of 68 bits slot
38	DA12	O	DA12	LR clock of 68 bits slot
39	DA11	O	DA11	GTOP output
40	DA10	O	DA10	XUGF output
41	DA09	O	DA09	XPLCK output

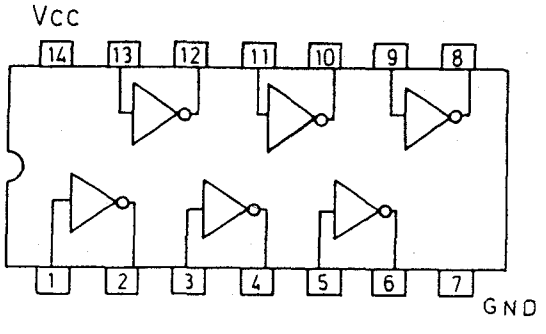
NO.	SYMBOL	I/O	DESCRIPTION	
42	DA08	O	DA08	GFS output
43	DA07	O	DA07	RFCK output
44	DA06	O	DA06	C2P0 output
45	DA05	O	DA05	XRAOF output
46	DA04	O	DA04	MNT 3 output
47	DA03	O	DA03	MNT 2 output
48	DA02	O	DA02	MNT 1 output
49	DA01	O	DA01	MNT 0 output
50	APTR	O	Control output for aperture correction. H when R ch.	
51	APTL	O	Control output for aperture correction. H when L ch.	
52	Vss		Ground terminal	
53	XTAI	I	Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input.	
54	XTAO	O	Crystal oscillation circuit output of 16.9344MHz.	
55	XTSL	I	Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz.	
56	FSTT	O	2/3 divided output of pins 53 and 54.	
57	C4M	O	4.2336 MHz output	
58	C16M	O	16.9344 MHz output	
59	MD2	I	Digital output control input. On at high level.	
60	DOUT	O	Digital output	
61	EMPH	O	Emphasis control output. Active high.	
62	WFCK	O	Write frame clock output	
63	SCOR	O	Sub-code detection output. H when is detected SO or SI.	
64	SBSO	O	Serial output of sub-code (P~W)	
65	EXCK	I	Clock input for read out SQSO.	
66	SQSO	O	Sub Q 80 bits, PCM peak, and level data 16 bits output.	
67	SQCK	I	Clock input for read out SQSO	
68	MUTE	O	Muting control output. Active H.	
69	SENS		Sens output. Output to the microprocessor	
70	XRST	I	System reset. Reset at the low level.	
71	DATA	I	Serial data input from the microprocessor.	
72	XLTA	I	Latch input from the microprocessor. Latch the serial data at the trailing.	
73	VDD		Power supply treminal	
74	CLOK	I	Serial data transfer clock input from microprocessor	
75	SEIN	I	Sens input from SSP	
76	CNCI	I	Track jump numbers count signal input	
77	DATO	O	Serial data output to SSP	
78	XLTO	O	Serial data latch output to SSP. Latch at trailing.	
79	CLKO	O	Serial data transfer clock output to SSP.	
80	MIRR	I	Mirror signal input	

Note: SSP: IC101 CXA1372Q

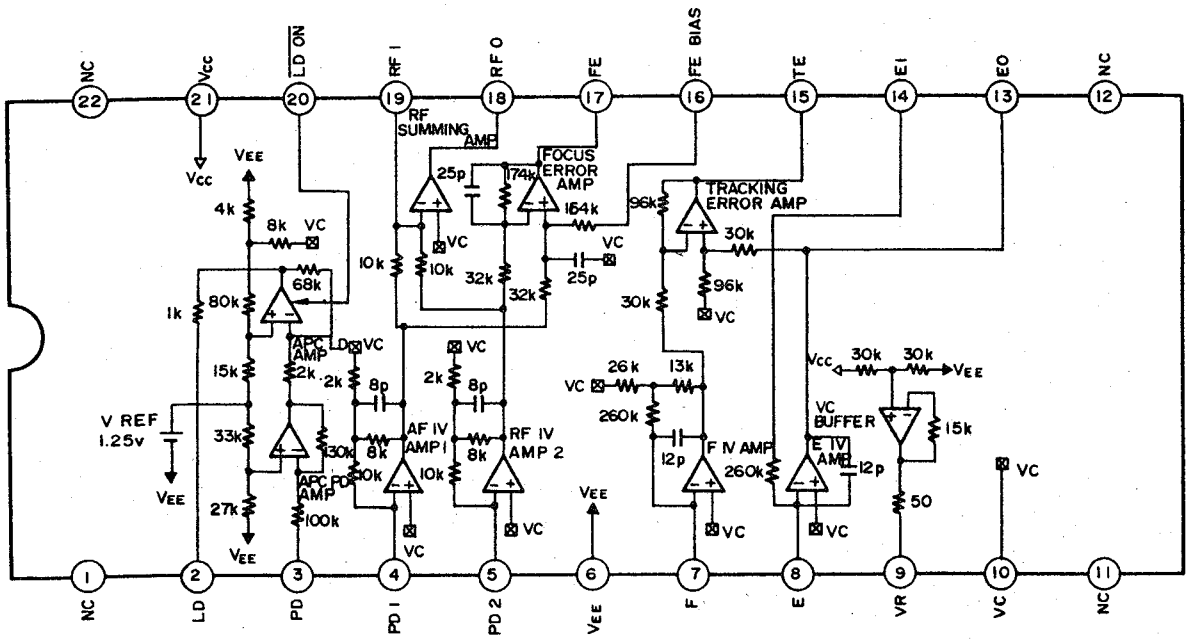
M51943ASL (System reset)



74HCU04P (Hex inverters)

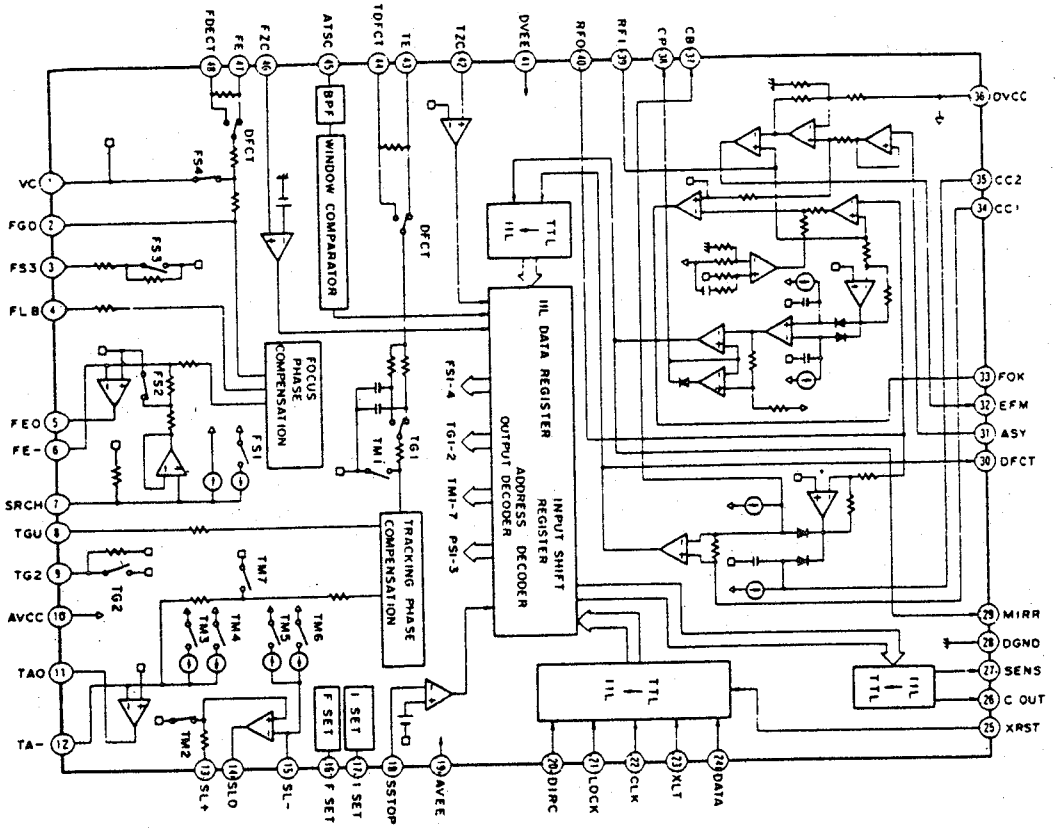


CXA1571S(RF Amp)



Pin No.	Symbol	I/O	Description
2	LD	O	Output terminal of APC amplifier.
3	PD	I	Input terminal of APC amplifier.
4	PD1	I	Inversion input terminal for RF I-V amplifier. Connect to photo diode A+C.
5	PD2	I	Inversion input terminal for RF I-V amplifier. Connect to photo diode B+D.
7	F-IN	I	Inversion input terminal for F I-V amplifier. Connect to photo diode F.
8	E-IN	I	Inversion input terminal for E I-V amplifier. Connect to photo diode E.
9	VR	O	DC voltage output of (Vcc+V_{EE})/2.
10	VC	I	Middle point voltage input terminal.
13	EO	O	Monitor output terminal for I-V amplifier E.
14	EI	-	Gain adjustment terminal for I-V amplifier E.
15	TE	O	Tracking error amplifier output terminal. The signal E-F is output from this terminal.
16	FE-BIAS	I	Bias adjustment terminal for non-inversion side of focus error amplifier.
17	FE	O	Focus error amplifier output terminal.
18	RFO	O	RF amplifier output terminal.
19	RFI	I	Inversion input terminal of RF amplifier.
20	LD-ON	I	Change-over terminal for APC amplifier.

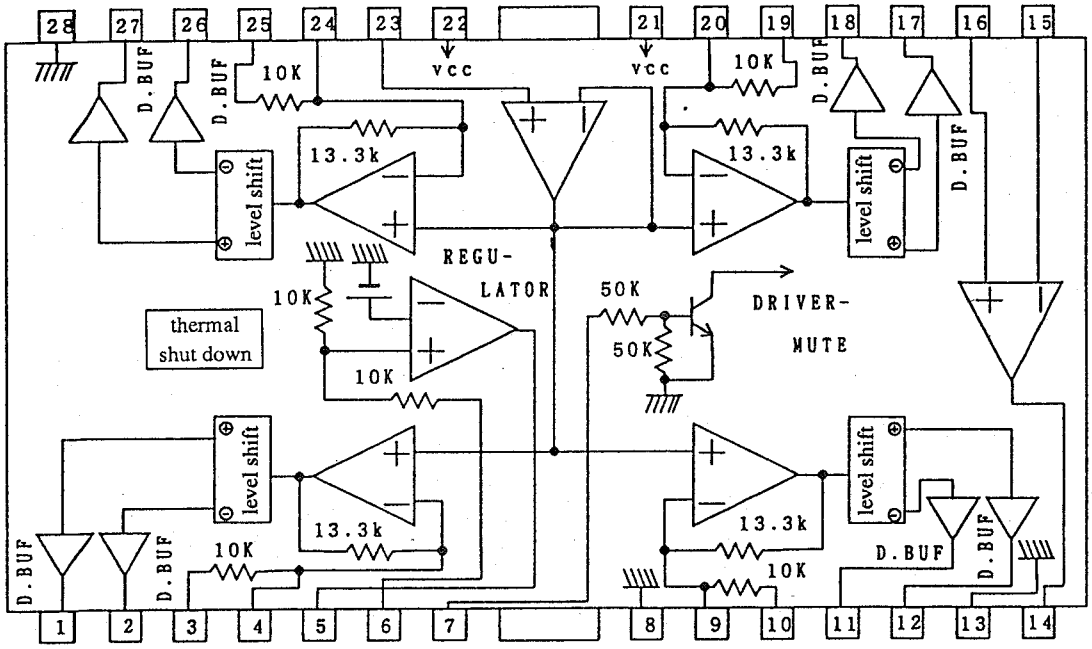
CXA1372Q(Servo Signal Processor)



PIN NO.	SYMBOL	I/O	DESCIRPION
1	VC	I	Mid-point voltage input terminal.
2	FGD	I	Connect the capacitor between FS3 and this pin when the high frequency gain focus servo is dropped.
3	FS3	I	Focus servo high frequency gain changeover input terminal.
4	FLB	I	Input terminal for the low frequency boost of focus servo.
5	FEO	O	Focus drive output terminal.
6	FE-	I	Inversion input terminal of focus amplifier.
7	SRCH	I	Time constant terminal to make the focus search waveform.
8	TGU	I	Tracking high frequency changeover input terminal.
11	TAO	O	Tracking drive output terminal.
12	TA-	I	Inversion input terminal of tracking amplifier.
13	SL+	I	No-inversion input terminal of sled amplifier.
14	SLO	O	Sled drive output terminal.
15	SL-	I	Inversion input terminal of sled amplifier.
16	FSET	I	Peak setting input of phase correction of focus tracking.
17	ISET	I	This terminal is flowed the current so that the focus search,tarcking jump,and sled kick height is decided.
18	SSTOP	I	Inner switch selection input terminal.
20	DIRC	I	This terminal is used when track jump.
21	LOCK	I	The sled runaway prevention circuit operates at the low level.
22	CLK	I	Serial data transfer clock input from microprocessor.

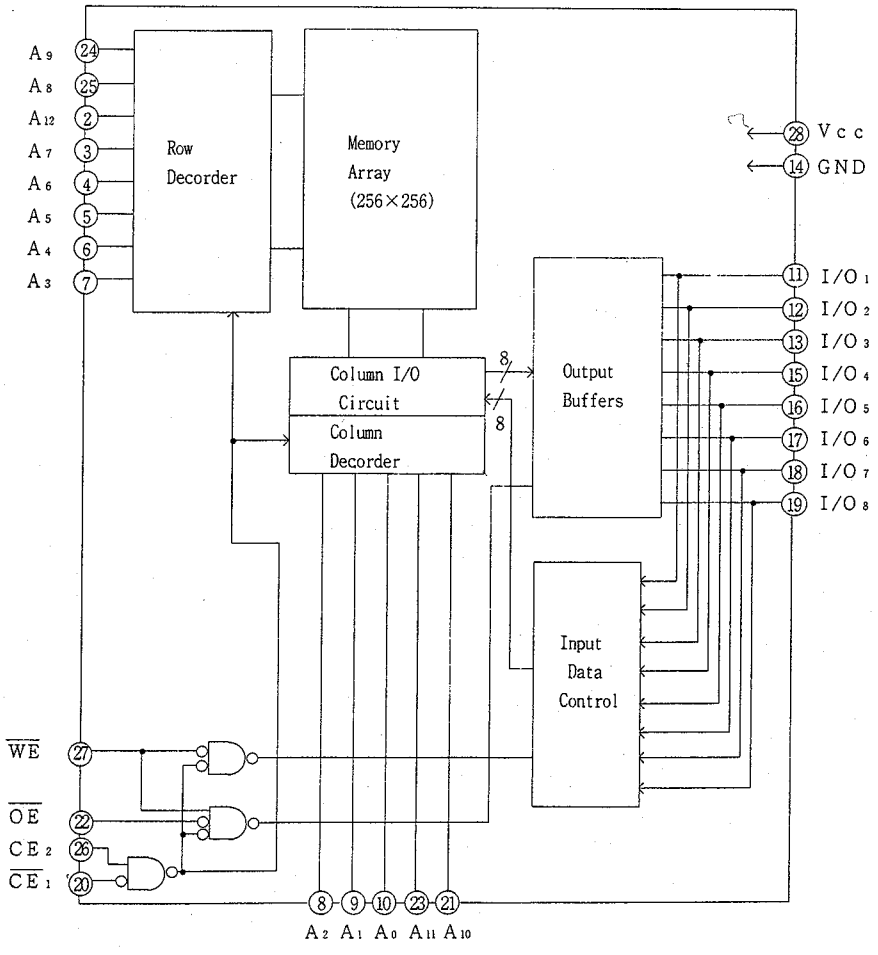
PIN NO.	SYMBOL	I/O	DESCIRPION
23	XLT	I	Latch input terminal for microprocessor.
24	DATA	I	Serial data input terminal for microprocessor.
25	XRST	I	Reset input terminal.Active low.
26	C.OUT	O	Signal output to count the track numbers.
27	SENS	O	This terminal outputs FZC,and SSTOP to according command from the microprocessor.
29	MIRR	O	Mirror comparator output terminal.
30	DFCT	O	Defect comparator output terminal.
31	ASY	I	Auto asymmetry control input terminal.
32	EFM	O	EFM comparator output terminal.
33	FOK	O	Focus OK comparator output terminal.
34	CC1	O	Defect bottom hold output terminal.
35	CC2	I	Defect bottom hold input terminal from CC1.
37	CB	I	Defect bottom hold capacitor connection terminal.
38	CP	I	Mirror hold capacitor connection terminal.
39	RFI	I	RF summing amplifier input terminal.
40	RFO	O	RF summing amplifier output terminal.
42	TZC	I	Tracking zero-cross comparator input terminal.
43	TE	I	Tracking error input terminal.
44	TDFCT	I	Capacitor connection terminal for time constant when defect.
45	ATSC	I	Window comparator input terminal for ATSC detection.
46	FZC	I	Focos zero-cross comparator input terminal.
47	FE	I	Focus error input terminal.
48	FDFCT	I	Capacitor connection terminal for time constant when defect.

BA6398FP

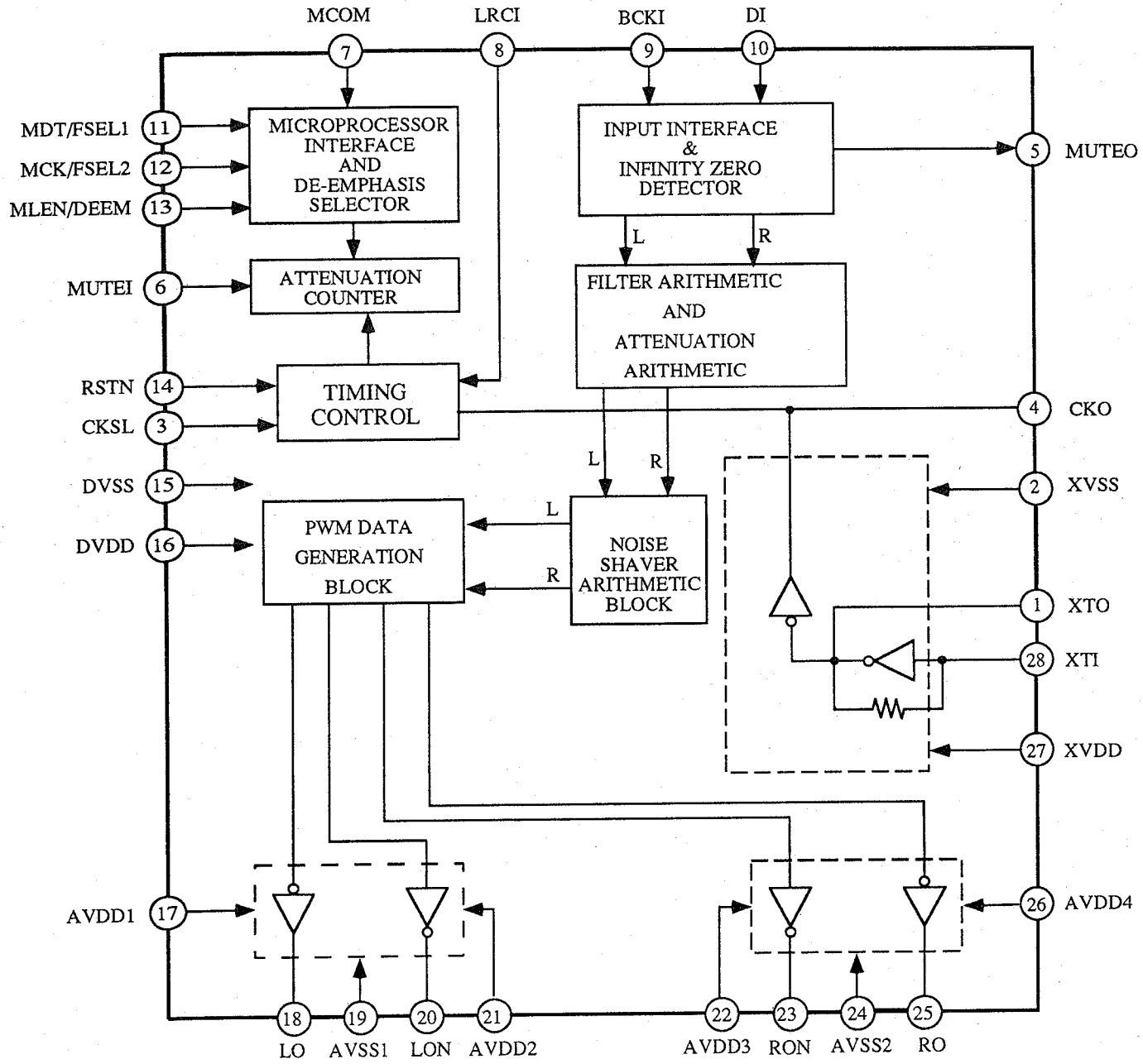


D.BUF : Drive Buffer

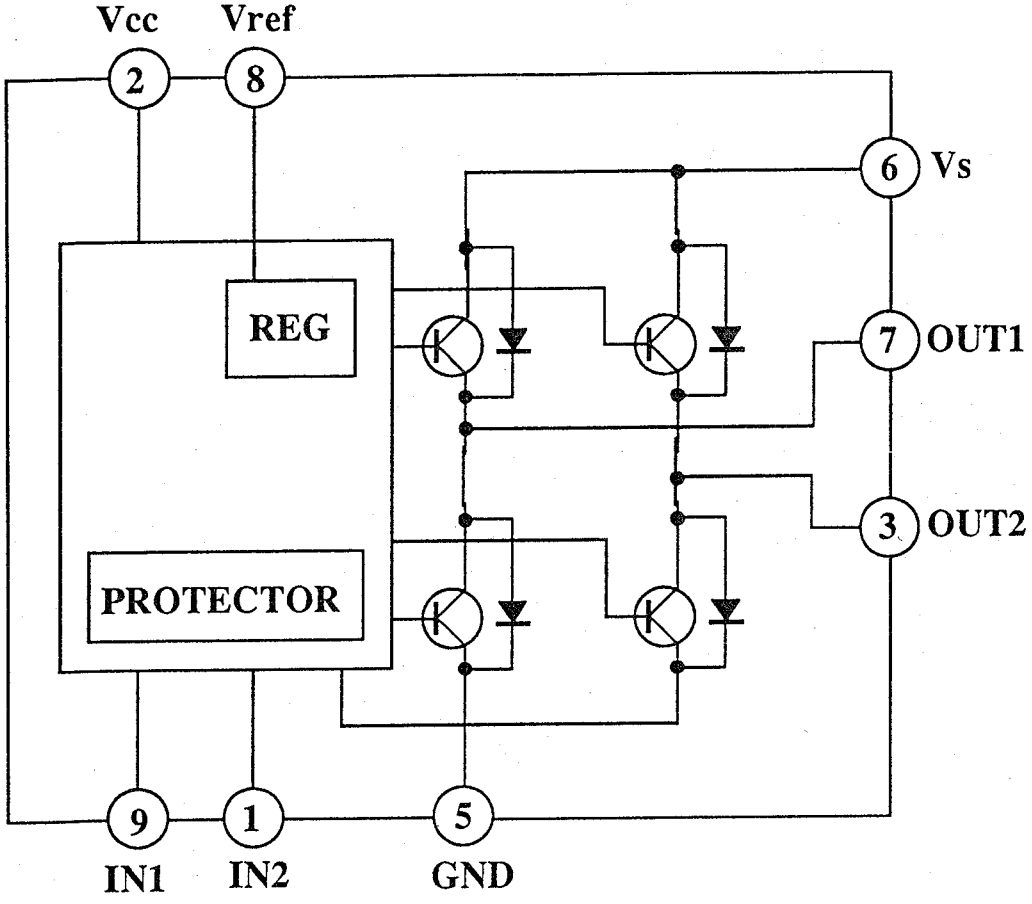
LH5164AN-10L



SM5872CN (D/A converter)



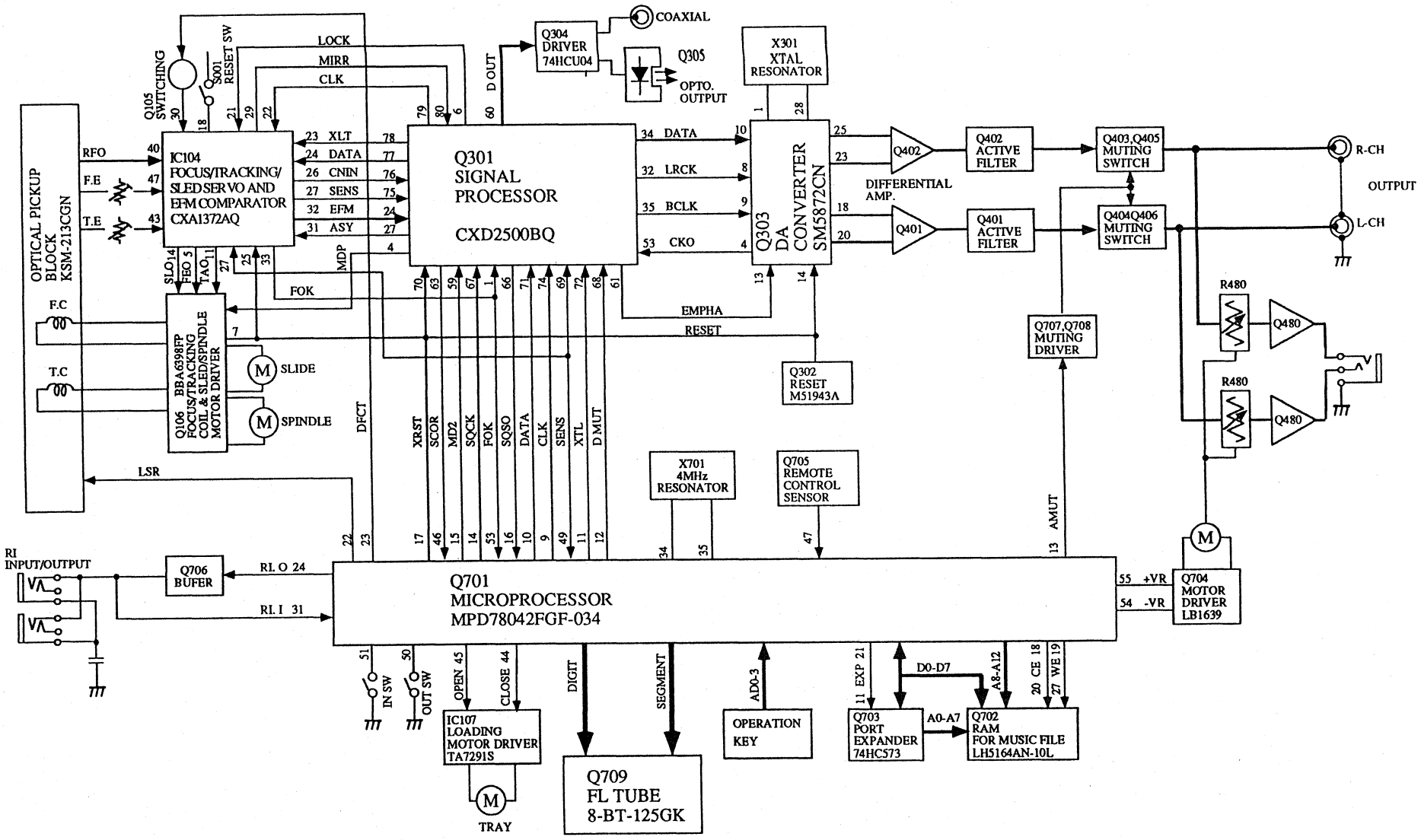
TA7291



INPUT		OUTPUT		
IN1	IN2	OUT1	OUT2	MODE
0	0	∞	∞	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

CCW:Counter clockwise direction
CW:Clockwise direction

BLOCK DIAGRAM



MICROPROSESSOER TERMINAL DESCRIPTION

µPD78042FGF-034

PIN NO.	SYMBOL	I/O	DESCRIPTON	PIN NO.	SYMBOL	I/O	DESCRIPTON
1	2G	O	FL tube grid signal	41	D2	I/O	Expander data and music file RAM data
2	3G			42	D1		
3	4G			43	D0		
4	5G			44	CLOSE	O	Tray open control signal
5	6G			45	OPEN	O	Tray close control signal
6	7G			46	SCOR	I	Sub code block detection signal from signal process IC
7	8G			47	RMCON	I	Remote control signal
8	Vdd	I	Power supply pin (+5V)	48	Vss	I	Power supply grand pin
9	CLK	O	Command forward clock for signal process IC	49	SENS	I	Sense input pin from signal processor
10	DATA	O	Command data for signal process IC	50	OUTSW	I	Tray open operation completion signal
11	XLT	O	Command latch for signal process IC	51	INSW	I	Tray close operation completion signal
12	DMUT	O	DIgital mute signal for audio output	52	Vdd	I	Power supply pin (+5v)
13	AMUT	O	Analog mute signal for audio output	53	FOK	I	Focus OK signal
14	SQCK	O	Sub code forward clock for signal process IC	54	VR DOWN	O	Motor volume down control signal
15	MD2	O	Inhibiting signal of digital output of signal processor	55	VR UP	O	Motor volume up control signal
16	SQSO	I	Sub code input pin from signal process IC	56	A12	O	Music file RAM address data input pin
17	XRST	I	Reset signal input pin	57	A11		
18	RAM.CE	O	Chip enable signal for music file RAM	58	A10		
19	RAM.WR	O	Write enable signal for music file RAM	59	A9		
20	AVss	I	A/D converter grand pin	60	A8		
21	EXP	O	Enable signal for port expander	61	P1	O	FL tube Segment signal
22	LSR	O	Laser control signal	62	P2		
23	DEFECT	O	Defect control signal	63	P3		
24	RI. OUT	O	System signal output pin	64	P4		
25	AD3	I	Key input pin	65	P5		
26	AD2			66	P6		
27	AD1			67	P7		
28	AD0			68	P8		
29	AVdd	I	A/D converter power supply pin (+5v)	69	P9		
30	AVref	I	A/D converter referense voltage input pin (+5V)	70	P10		
31	RI.IN	I	System signal input pin	71	-Vp	I	Negative power supply pin for FL tube
32	NC		Not used	72	P11	O	FL tube Segment signal
33	Vss	I	Power supply grand pin	73	P12		
34	X1	I	Clock circuit input pin	74	P13		
35	X2	O	Clock circuit output pin	75	P14		
36	D7	I/O	Expander data and music file RAM data	76	P15		
37	D6			77	P16		
38	D5			78	NC		Not used
39	D4			79	NC		Not used
40	D3			80	1G	O	FL tube grid signal

ADJUSTMENT PROCEDURES

Instruments required

Dual trace oscilloscope, Frequency counter, AF oscillator, Test disc (SONY YEDS-18) and AC voltmeter.

1. Focus offset adjustment

Turn R120 and R121 to the mechanical center.
Load the test disc YEDS-18 on the tray and play the track 2.
Connect the oscilloscope to terminal P105.
Adjust R119 until the waveform on the oscilloscope becomes maximum.
After adjustment, disconnect the oscilloscope.

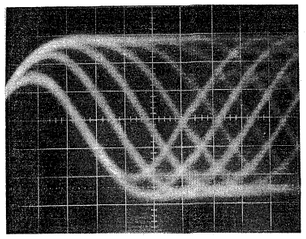
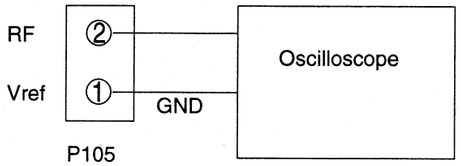


Photo 1

0.2V/div
0.2μs/div



2. Tracking offset adjustment

Load the test disc YEDS-18 on the tray and play the track 2.
Turn R121 to minimum position. (Counter clockwise)
Connect the oscilloscope across pin 1 (TE2) of P106 and pin 1(Vref) of P105.
Adjust R116 until the center of tracking error signal on the oscilloscope becomes GND level.
Turn R121 to the mechanical center.
After adjustment, desconnect the oscilloscope.

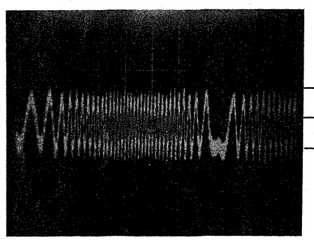
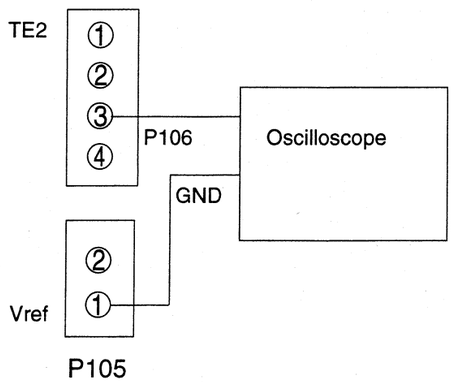


Photo 2

0.5V/div
5ms/div



3. Focus gain adjustment

Set the output of AF oscillator to 800Hz, 1~1.5Vp-p.
Play the track 2 of test disc.
Connect the oscilloscope and the AF oscillator as shown below.

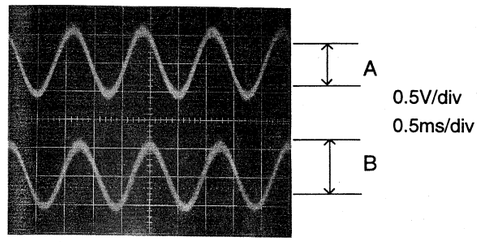
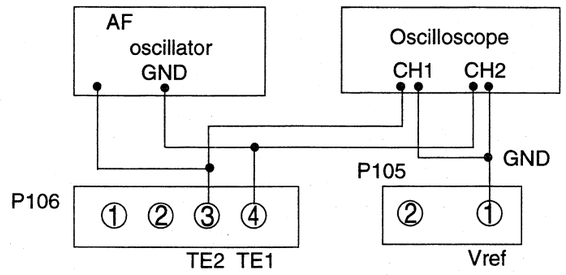


Photo 3



Adjust R120 until 800Hz components of channels 1and 2 on oscilloscope become same level.
After adjustment, disconnect the AF oscillator and the oscilloscope.

4. Tracking gain adjustment

Set the output of AF osillator to 1.2kHz, 1~1.5Vp-p.
Play the track 2 of test disc.
Connect the oscilloscope and the AF oscillator as shown below.

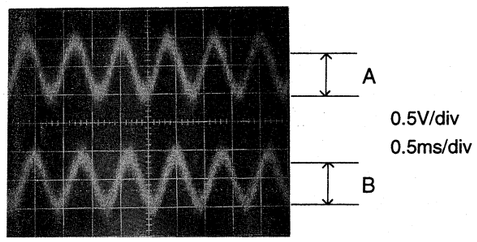
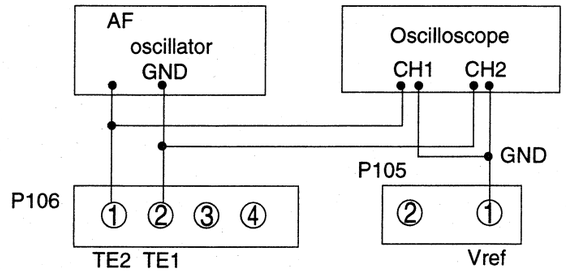
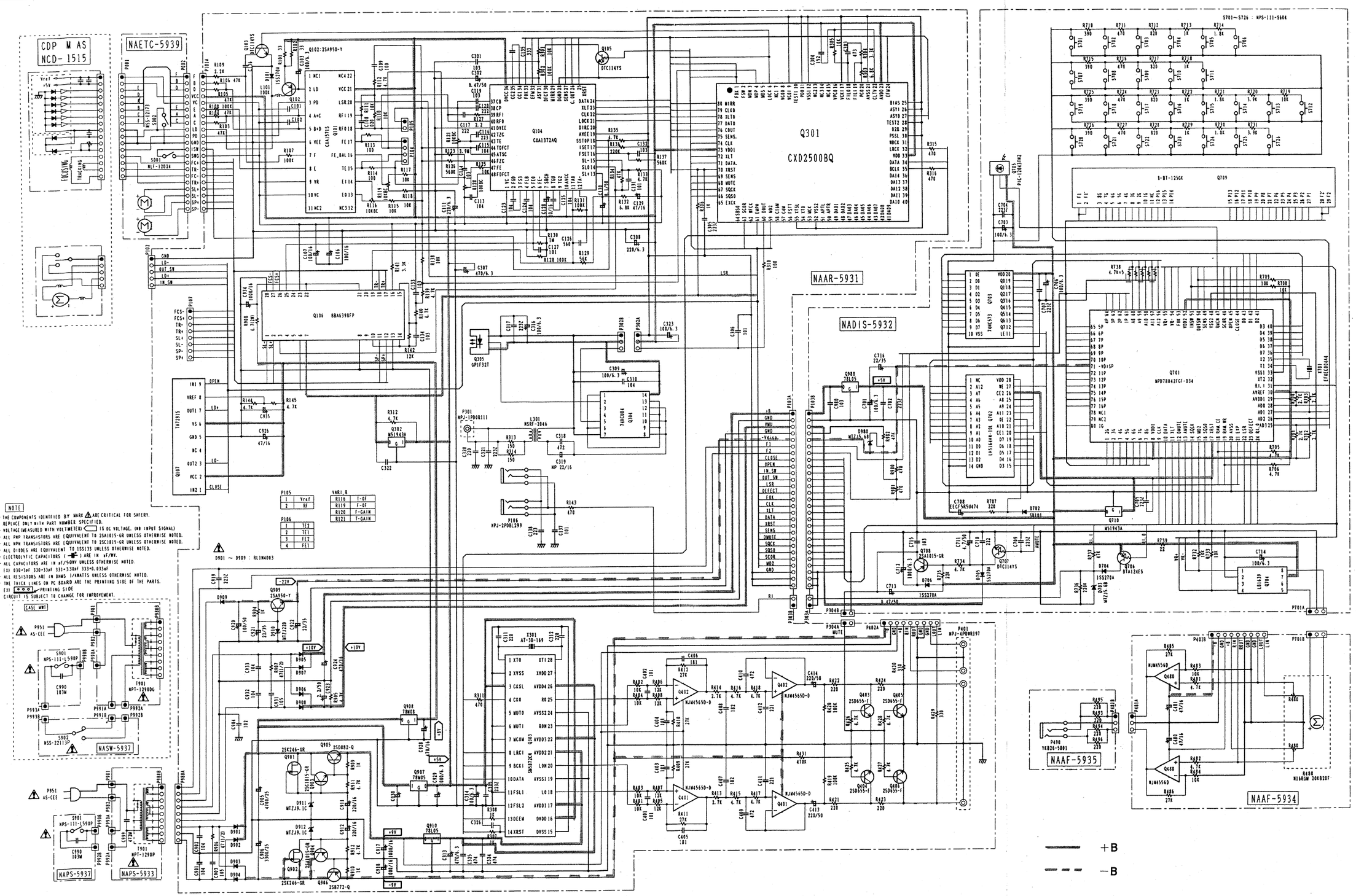


Photo 4

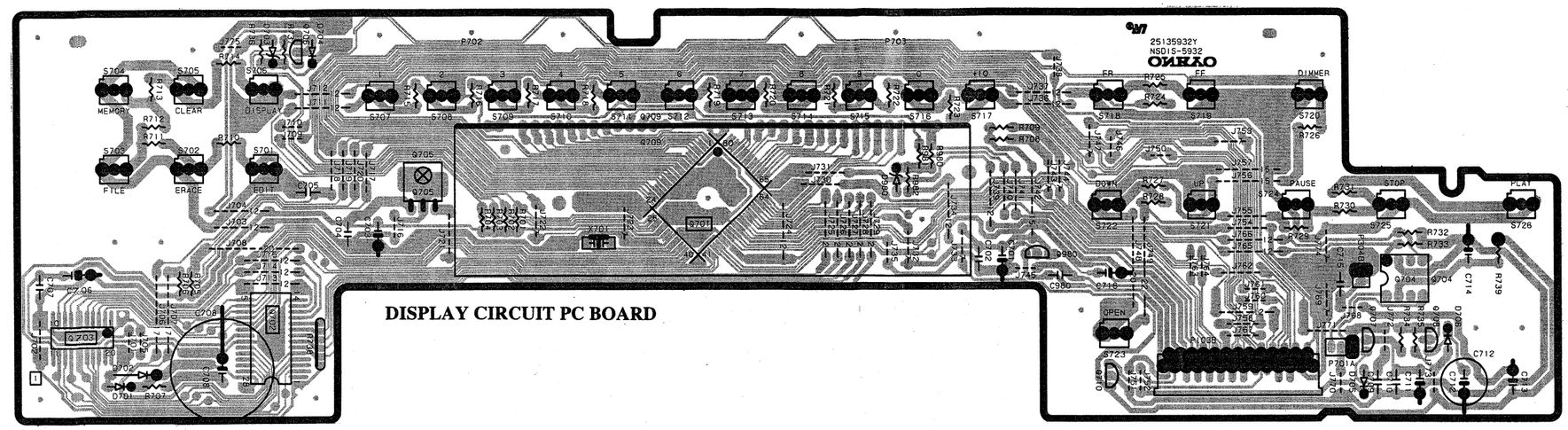


Adjust R121 until 1.2kHz components of channels 1and 2 on oscilloscope become same level.
After adjustment, disconnect the AF oscillator and the oscilloscope.
After adjustment, confirm that the center of tracking error signal becomes GND level.

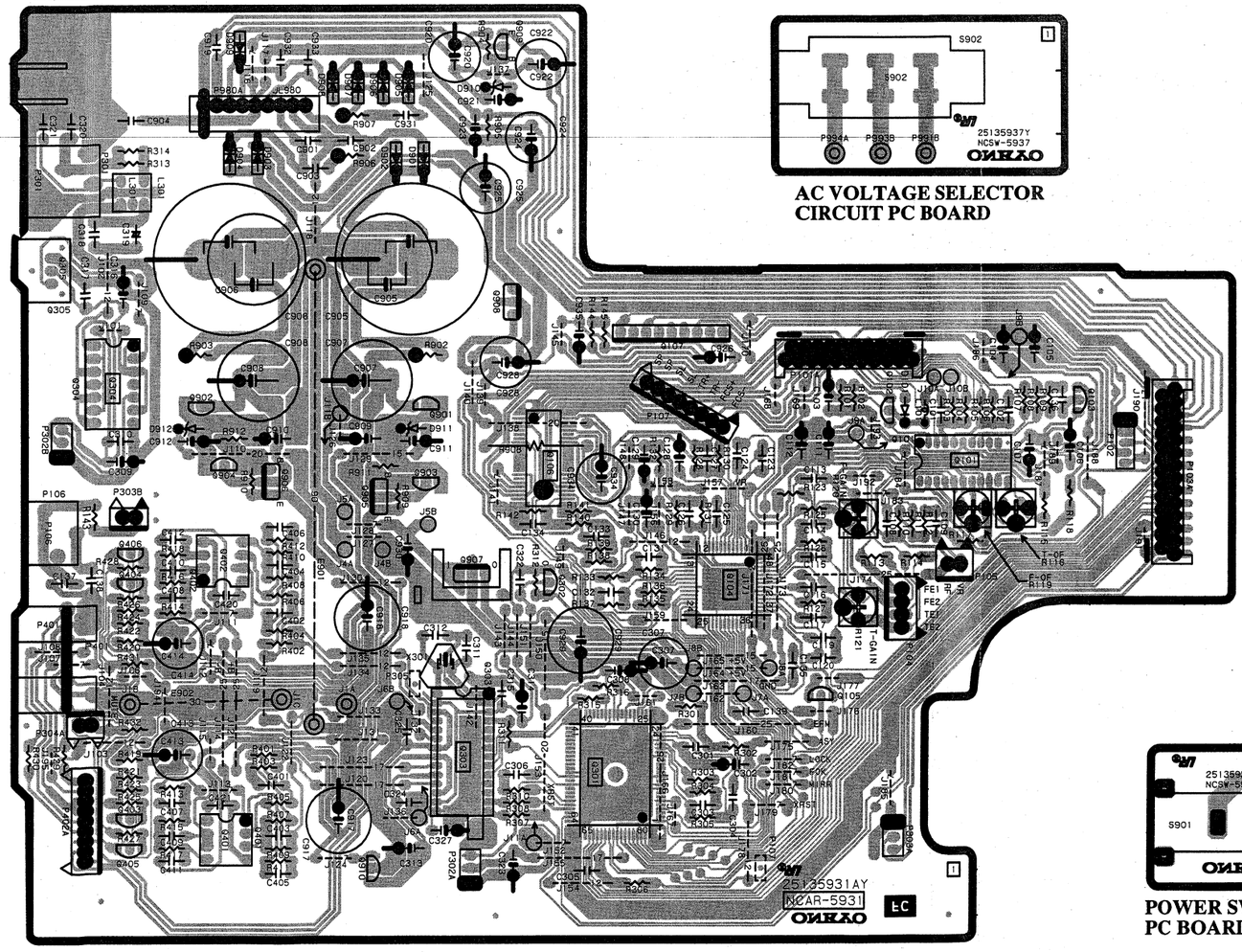
SCHEMATIC DIAGRAM



PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

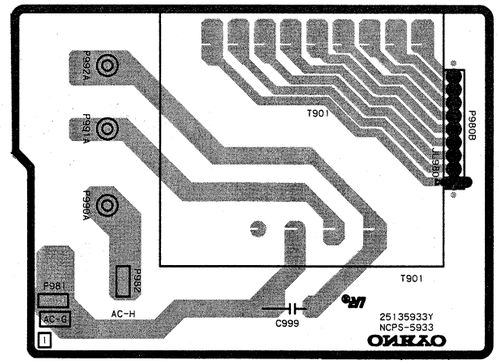


DISPLAY CIRCUIT PC BOARD

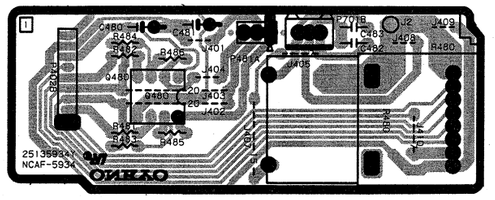


MAIN CIRCUIT PC BOARD

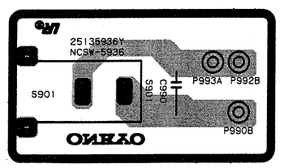
AC VOLTAGE SELECTOR CIRCUIT PC BOARD



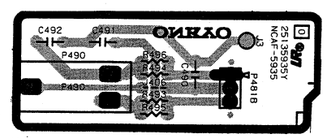
POWER TRANSFORMER PC BOARD



OUTPUT LEVEL CONTROL CIRCUIT PC BOARD



POWER SWITCH CIRCUIT PC BOARD



HEADPHONE JACK PC BOARD

PRINTED CIRCUIT BOARD- PARTS LIST

MAIN CIRCUIT PC BOARD (NAAR-5931-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q101	22240404	CXA1571S
Q104	22241067	CXA1372AQ
Q106	22241066	BA6398FP
Q107	22240239	TA7291S
Q301	22240487A	CXD2500BQ
Q302	22240018	M51943A
Q303	22240726	SM5872CN
Q304	222755	TC74HCU04AP
Q401,Q402	22240191	NJM4565D-D
Q907	222780055	78M05HF
Q908	222780085	78M08HF
Q910	222780053	78L05
	Transistors	
Q102	2211504	2SA950-Y
Q105	221281	DTC114YS
Q403-Q406	2211706 or	2SD655-F or
	2211705	2SD655-E
Q901,Q902	2211945 or	2SK246-GR or
	2212305	2SK381-E
Q903	2211255 or	2SC1815-GR or
	2211254	2SC1815-Y
Q904	2211455 or	2SA1015-GR or
	2211454	2SA1015-Y
Q905	2201285	2SD882-Q
Q906	2201275	2SB772-Q
Q909	2211504 or	2SA950-Y or
	2211503	2SA950-O
	Optical module	
Q305	24120038	GP1F32T
	Diodes	
D101	223205 or	1SS270A or
	223163	1SS133
D901-D909	⚠ 22380260 or	RL1N4003 or
	22380032 or	1SR139-100 or
	22380035	GP104003E
D910	224472204	MTZJ22D, Zener
D911,D912	224470913	MTZJ9.1C, Zener
	Crystal	
X301	3010159	AT-38-169
X301A	27190751	Holder
	Coils	
L101	233454K100	NCH-1452, 100K, Choke coil
L301	232136	NSRF-2046, MPX coil
	Capacitors	
C103	354721019	CE04W6.3V, 100M, Elect
C106,C107	354741019	CE04W16V, 100M, Elect
C111	354722219	CE04W6.3V, 220M, Elect
C113,C115	374721044	ECQ-V50V, 104J, TF
C114,C119	374721034	ECQ-B50V, 103J, TF
C116	374722234	ECQ-B50V, 223J, TF
C117,C120	374722224	ECQ-B50V, 222J, TF
C123-C125	374721044	ECQ-V50V, 104J, TF
C128	354741009	CE04W16V, 10M, Elect
C129	354744709	CE04W16V, 47M, Elect

CIRCUIT NO.	PART NO.	DESCRIPTION
C130	354781099	CE04W50V, 0.1M, Elect
C132-C134	374721034	ECQ-B50V, 103J, TF
C135	374723334	ECQ-V50V, 333J, TF
C301	374721034	ECQ-B50V, 103J, TF
C302	354784799	CE04W50V, 0.47M, Elect
C303	374724734	ECQ-V50V, 473J, TF
C304	374721524	ECQ-B50V, 152J, TF
C307	354724719	CE04W6.3V, 470M, Elect
C308	354722219	CE04W6.3V, 220M, Elect
C309	354721019	CE04W6.3V, 100M, Elect
C310	374721044	ECQ-V50V, 104J, TF
C313	354724719	CE04W6.3V, 470M, Elect
C314,C316	354721019	CE04W6.3V, 100M, Elect
C318	374724724	ECQ-B50V, 472J, TF
C319	352942206	NP04D16V, 22M, Elect
C323	354721019	CE04W6.3V, 100M, Elect
C324,C325	374724744	ECQ-V50V, 474J, TF
C407,C408	374721824	ECQ-B50V, 182J, TF
C409,C410	374724724	ECQ-B50V, 472J, TF
C413,C414	354782219	CE04W50V, 220M, Elect
C901,C902	374721044	ECQ-V50V, 104J, TF
C903	374721054	ECQ-V50V, 105J, TF
C905	354754729	CE04W25V, 4700M, Elect
C906	354753329	CE04W25V, 3300M, Elect
C911,C912	354742219	CE04W16V, 220M, Elect
C917,C918	354741029	CE04W16V, 1000M, Elect
C920	354781019	CE04W50V, 100M, Elect
C921	354762209	CE04W35V, 22M, Elect
C922	355762209	CE04W35V, 22M, Elect
C923	354780229	CE04W50V, 2.2M, Elect
C924	354744719	CE04W16V, 470M, Elect
C926	354744709	CE04W16V, 47M, Elect
C928	354744719	CE04W16V, 470M, Elect
C929	354721029	CE04W6.3V, 1000M, Elect
C931	374721054	ECQ-V50V, 105J, TF
C932,C933	374721044	ECQ-V50V, 104J, TF
C934	354741029	CE04W16V, 1000M, Elect
	Resistors	
R116,R119, R120,R120	5210262	N06HR10KBC, Trimming
R906,R907	443524704	RS1/2WBJ, 47, Metal oxide
R908	451730474	RNU2WCJ, 4.7, Metal
	Sockets	
P101A	25050961	NSCT-21P748
P102	2009990438ULY	NSAS-10P0582
P103A	25051834 or	NSCT-27P1621 or
	25050967	NSCT-27P754
P302	2009990442ULY	NSAS-6P0586
P303	2009990450ULY	NSAS-2P0601
P304	2009990451ULY	NSAS-4P0602
P980A	25050273	NSCT-9P101
	Plugs	
P104	25055045	NPLG-4P33
P105	25055038	NPLG-2P29
P303B	25055132	NPLG-2P116
P304A	25055146	NPLG-2P130
P402A	25055153	NPLG-9P137

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminals	
P106	25045481 or	NPJ-2PDBL299, JACK or
	25045330	NPJ-2PDBL184, JACK
P301	25045237	NPJ-1PDOR111, PIN JACK
P401	25045351	NPJ-4PDWR197, PIN JACK
	Others	
E101	25065425	M3 Screw terminal

DISPLAY CIRCUIT PC BOARD (NADIS-5932-1)

	ICs	
Q701	22241064Y	MPD78042FGF-034
Q702	22241065Y	LH5164N-10L
Q703	222745735R0HI	HD74HC573FP
Q704	22240322	LB1639
Q710	22240018	M51943A
Q980	222780053	78L05
	Transistors	
Q706	2212600	DTA124ES
Q707	221281	DTC114YS
Q708	2211455	2SA1015-GR
	Remote sensor	
Q705	241302	PIC-12043TH2
	FL Tube	
Q709	212109	8-BT-125GK
	Diodes	
D702	223191	SD101
D703	224470562	MTZJ5.6B, Zener
D704-Q706	223205 or	1SS270A or
	223163	1SS133
D980	224470562	MTZJ5.6B, Zener
	Cera lock	
X701	3010229	EFOEC4004A4
	Capacitors	
C701	355721019	CE04W6.3V, 100M, Elect
C703,C706	354721019	CE04W6.3V, 100M, Elect
C708	3000064	EECF5R5U474, FYD
C710	374722224	ECQ-B50V, 222J, TF
C711	354780479	CE04W50V, 4.7M, Elect
C712	354721029	CE04W6.3V, 1000M, Elect
C713	354784799	CE04W50V, 0.47M, Elect
C714	354721019	CE04W6.3V, 100M, Elect
C715,C980	374721034	ECQ-B50V, 103J, TF
	Resistors	
R738	49163472405	RM1/10IJ, 4.7K×5, Array
R739	443522204	RS1/2WBJ, 22, Metal oxide
	Others	
S701-S726	25035652	NPS-111-S604, Push switch
P103B	25051871 or	NSCT-27P1658, Socket or
	25050933	NSCT-27P720, Socket
P701A	2000972ULY	NSAS-6P924, Socket AS
E701	27190990Y	Holder (FL)

POWER TRANSFORMER PC BOARD (NAPS-5933-1)

C999	⚠ 3500077	DE7150F, 472M, IS C
P980B	25051113	NSCT-9P900, Wire Holder

OUTPUT LEVEL CONTROL CIRCUIT PC BOARD (NAAF-5934-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Ic	
Q480	222654	NJM4556D
	Others	
C480,C481	354744709	CE04W16V, 47M, Elect C
R480	5104327	N16RGM, 20KB20F, Variable R
P402B	2009990436ULY	NSAS-18P0580, Socket AS
P481A	25051107	NSCT-3P894, Wire Holder
P701B	25055147	NPLG-3P131, P Plug

HEADPHONE JACK PC BOARD (NAAF-5935-1)

P481B	25051107	NSCT-3P894, Wire Holder
P490	25045441	YKB26-5801, Jack

POWER SWITCH CIRCUIT PC BOARD (NASW-5936-1)

C990	3500191	DF7150F 103M, AC400V/125V, IS C
S901	⚠ 25035636	NPS-111, -L590P, Push Switch

AC VOLTAGE SELECTOR CIRCUIT PC BOARD (NASW-5937-1)

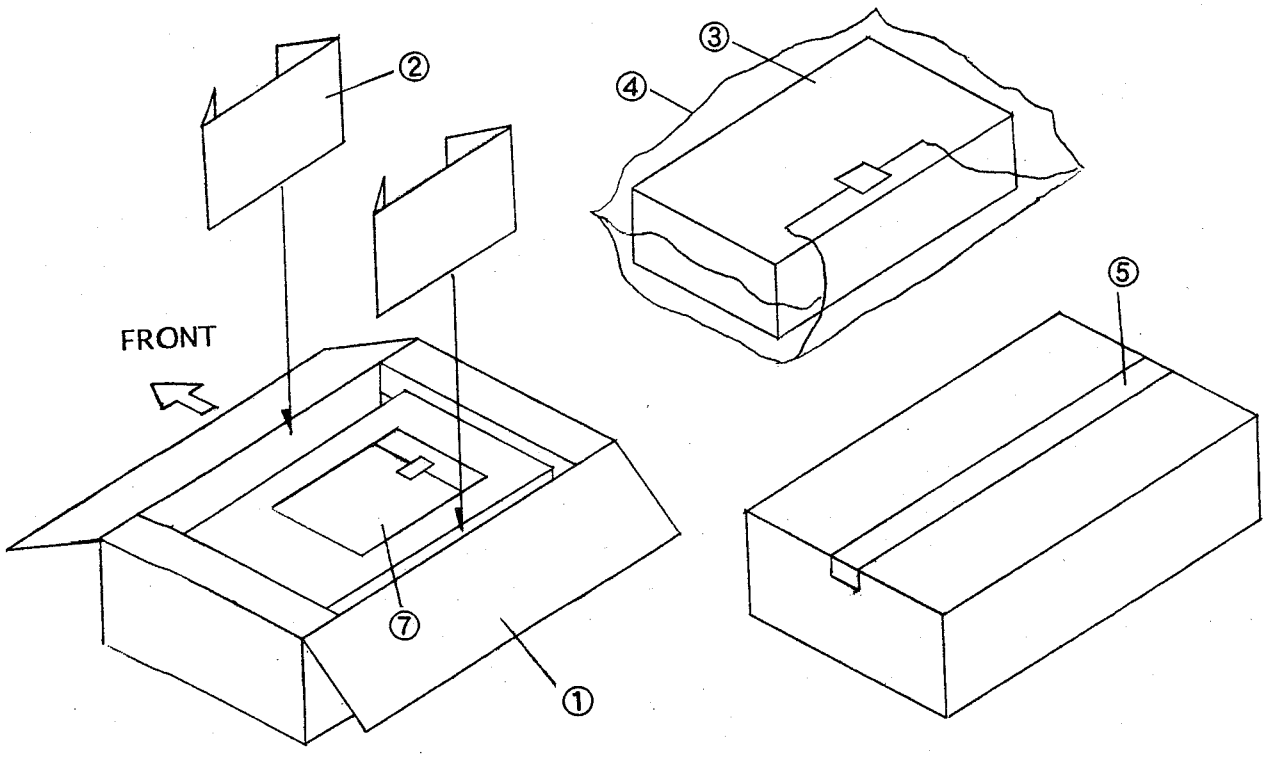
S902	⚠ 25065287	NSS-22113P, Slide switch

CD MECHANISM CIRCUIT PC BOARD (NAETC-5939-1)

S001	25065523Y	NLF-12024, Switch
S002	25065525Y	NSS-12173, Switch
P001	25051796Y	NSCT-16P1583, Socket
P002	25051754Y	NSCT-21P1541, Socket

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

PACKING VIEW



PARTS LIST

REF NO.	PART NO.	DESCRIPTION
1	29053177Y	Carton box <B>
	29053178Y	Carton box <S>
2	29095779AY	Sheet (W)
3	29095780Y	0.5×1000×500, Sheet
4	29100141AY	700×600, Styrene bag
5	29110071	Tape
6	29362104	Label (EAN) <B>
	29362105	Label (EAN) <S>
7	Accessary bag ass'y	
	29100097-1AY	350×250, Styrene bag
	29342394Y	Instruction manual (E)
	29342395Y	Instruction manual (U3 FSI) <P>
	29342396Y	Instruction manual (U3 GSwD) <P>
	29342397Y	Instruction manual (T) <T,W>
	2010326Y or	Pin cord ass'y or
	2010244Y	Pin cord ass'y
	2010200	3.5 mini plug, Cord ass'y
	25055040	CV-K-2, Conversion plug <W>
	24140333Y	RC-333C, Remote controller
	3010054	UM-3, Battery

<B>: Black model only
<S>: Silver model only
<P>: European model only
<T>: Asian model only
<W>: Worldwide model only